

Case Report:

Left atrial ball valve thrombus

R. Balaji,¹ V.S. Srinath,¹ K.V. Krishna Kumar²

Departments of ¹Cardiology, ²Cardiothoracic and Vascular Surgery,
Krishna Institute of Medical Sciences, Secunderabad

ABSTRACT

"Ball valve thrombus" which is a spherical free floating clot in left atrium is an often quoted, but uncommonly encountered complication in patients with severe mitral stenosis of rheumatic origin, who are in atrial fibrillation. We describe the case of a 31-year-old lady with rheumatic heart disease, severe mitral stenosis and moderately severe aortic stenosis who had undergone closed mitral valvotomy 13 years ago. The patient presented with an episode of non-exertional syncope and breathlessness on exertion of 6 months duration and was in normal sinus rhythm. Echocardiography facilitated ante-mortem diagnosis and prompt institution of surgery was life saving.

Key words: Rheumatic heart disease, Mitral stenosis, Ball valve thrombus, Echocardiography

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INTRODUCTION

A spherical free floating clot in left atrium is uncommon, mostly occurring in patients with severe mitral stenosis of rheumatic origin. Such a clot is appropriately named as "ball valve thrombus". This entity, an often quoted complication of mitral stenosis, is extremely rare.¹ Ball valve thrombus has potential life threatening consequences if not treated early. We report the occurrence of this rare complication in a woman with mitral stenosis due to rheumatic heart disease.

CASE REPORT

A 31-year-old lady, who was known to have rheumatic heart disease, and had undergone closed mitral valvotomy (CMV) 13 years back presented with an episode of non-exertional syncope, and breathlessness on exertion of 6 months duration. On general physical examination she was conscious, alert. There was no pallor, cyanosis or dependant oedema. The jugular venous pulse was not raised; pulse was 76 beats/min, regular; blood pressure was 120/80 mm Hg in the right arm in supine position. Cardiovascular system examination revealed features suggestive of severe mitral stenosis and moderate aortic stenosis. Her chest radiograph revealed left atrial enlargement and

mild pulmonary venous congestion. All her peripheral pulses were felt and she had no neurological deficits. Her electrocardiogram (ECG) revealed sinus rhythm with left atrial overload pattern. Her echocardiogram confirmed rheumatic heart disease with severe mitral stenosis, severe aortic stenosis, mild aortic regurgitation and moderate pulmonary arterial hypertension (PAH). In addition, a spherical large smooth walled free floating thrombus, measuring 4.3 × 3.5 cm was observed in the left atrium, intermittently albeit transiently occluding the left ventricular inflow (Supplementary video). The patient underwent open heart surgery, removal of clot (Figure 1), mitral and aortic valve replacement. At 2 months follow-up post-surgery, the patient is doing well and is asymptomatic.

DISCUSSION

Ball-valve thrombus, a free-floating thrombus within the left atrium is a rare entity. Till date, less than 60 cases have been reported till the 1980's.²⁻⁴ In most of the patients presenting with a ball valve thrombus, severe mitral stenosis of rheumatic origin has been the most common predisposing condition. Our patient had severe mitral stenosis and moderately severe aortic stenosis of rheumatic origin. Infrequently, ball valve thrombus has been described in patients with mechanical

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Corresponding author: Dr R. Balaji, Consultant and Interventional Cardiologist, Krishna Institute of Medical Sciences, Secunderabad, India. **e-mail:** drrbalaji@yahoo.co.in

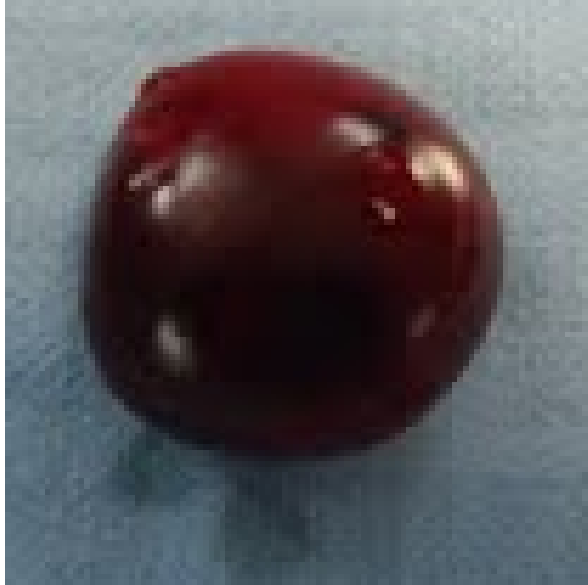


Figure 1: Gross specimen photograph showing a spherical clot that was found to be free floating in the left atrium at the time of surgery

mitral prosthetic valve,⁵ bio-prosthetic valve,⁶ in isolated severe aortic stenosis,⁷ and in patients with no valvular heart disease.⁸ The reason for typical spherical shape could be because of fresh clot being layered out concentrically as it spins around the atrium.⁹ The diagnosis of a free ball valve thrombus is based on two criteria: the thrombus must be larger than the orifice of the valve, and it must have a smooth surface with no signs of attachment to the atrial wall.¹⁰ Both the criteria were satisfied in our patient.

In patients with rheumatic mitral stenosis who develop a ball valve thrombus as a complication, atrial fibrillation is often present.^{2,4} In contrast, our patient was in normal sinus rhythm, suggesting that ball valve thrombus can rarely develop in patients with normal sinus rhythm also. Clinically ball valve thrombus can produce symptoms of heart failure or embolic stroke, peripheral embolism or sudden death.⁹ The risk of systolic embolism in patients with left atrial thrombus is high and estimated to be around 10.4% per year,¹¹ suggesting that the stenotic mitral valve orifice does not effectively guard against thromboembolism. It may also happen that ball valve thrombus may embolize silently causing either embolic stroke or periph-

eral embolism¹² or incidentally embolize during surgery causing management problems.¹³

At bedside, the diagnosis may be suspected only if there is high degree of suspicion and requires assessment of the influence of change of posture on symptoms and haemodynamic parameters.² Before the era of echocardiography the diagnosis was usually made post-mortem. With the advent of echocardiography, ball valve thrombus is being diagnosed more frequently.^{2,14} Oral anticoagulation is usually avoided in these patients as this can result in fragmentation of the thrombus and embolization. Urgent and prompt surgery as was done in our patient can be life saving.

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Supplementary video recording of the echocardiographic findings is available at URL: <http://svimstpt.ap.nic.in/jcsr/jhome.htm>